Preparatory Committee for the 2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons

7 March 2018

Original: English

Second session
Geneva, 23 April–4 May 2018

Strengthening nuclear safety

Working paper submitted by Switzerland

Introduction

1. The 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons adopted an action plan containing several actions on strengthening nuclear safety:

- **Action 57:** Ensure that, when developing nuclear energy, including nuclear power, the use of nuclear energy must be accompanied by commitments to and ongoing implementation of safeguards as well as appropriate and effective levels of safety and security, consistent with States' national legislation and respective international obligations.
- **Action 59:** Consider becoming party, if they have not yet done so, to the Convention on Nuclear Safety, the Convention on Early Notification of a Nuclear Accident, the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, the International Convention for the Suppression of Acts of Nuclear Terrorism, the Convention on the Physical Protection of Nuclear Material, and to ratify its amendment so that it may enter into force at an early date.
- **Action 60:** Promote the sharing of best practices in the area of nuclear safety and security, including through dialogue with the nuclear industry and the private sector, as appropriate.

2. Switzerland considers that these actions still remain valid for the two following reasons. First, the 2010 Review Conference was the last time that an outcome document was approved unanimously by all States parties. Second, the continuous efforts to strengthen nuclear safety are not limited in time and should be further reinforced, taking into account the developments and progress made since 2010. The peaceful use of nuclear energy goes hand in hand with the responsibility of States with regard to nuclear safety. The accident in March 2011 at the Fukushima Daiichi nuclear power plant reminded stakeholders of this imperative and was a wake-up call for all. Since the accident, nuclear safety has gained large international attention, and the International Atomic Energy Agency (IAEA) is expected to play a leading role in

Please recycle

contributing to the enhancement of the safety of nuclear installations worldwide. In order to fulfil this important task, the development of an underlying nuclear safety strategy, based on the IAEA Action Plan on Nuclear Safety and the experience of its implementation by IAEA member States, the IAEA report on the Fukushima Daiichi nuclear power plant accident and the Vienna Declaration on Nuclear Safety, is fundamental.

Elements for strengthening nuclear safety

3. In order to further enhance nuclear safety worldwide, Switzerland suggests the following elements for consideration by States parties.

Continuous improvement of nuclear safety

4. **Proposal:** Switzerland encourages States parties to implement in a timely manner and to report regularly through the appropriate framework on reasonably practicable or achievable safety improvements to existing nuclear power plants.

5. **Rationale:** Through the adoption of the Vienna Declaration on Nuclear Safety in 2015, the international community has manifested its commitment to continuing to improve the safety of nuclear power plants around the world. Switzerland initiated the process leading to the adoption of the Vienna Declaration and continues to play an important role in its incorporation as the new reporting standard for future review meetings of the Convention on Nuclear Safety. At the seventh Review Meeting of the Convention, held in 2017, the commitment of Contracting Parties to the Convention to the implementation of the Vienna Declaration was reaffirmed. This ensures that the Vienna Declaration remains a reference document for future review processes within the Convention. For its part, IAEA must also play a vital role in further promoting the universalization of the principles of the Vienna Declaration. This was clearly underlined in the resolution on nuclear safety, adopted in 2017, at the sixty-first IAEA General Conference, in which member States encouraged the IAEA to further enhance the mutual sharing of experience and information exchange in the field of safety improvements at existing nuclear power plants.

6. In the Vienna Declaration, it is stated that "reasonably practicable or achievable safety improvements are to be implemented in a timely manner". This concept should apply to all aspects of nuclear safety, including comprehensive and systematic safety assessments to be carried out before the construction and commissioning of a nuclear installation and throughout its lifetime. Such assessments should be well documented and updated with respect to the following aspects: operating experience, hazard assumptions, which are reconsidered according to the state of the art in science and technology, and other significant new safety information. In addition, the safety assessments should be reviewed regularly under the authority of the regulatory body. For existing reactors, where a modern standard or good practice associated with new reactors is not directly applicable or cannot be implemented fully, alternative safety or risk reduction measures (design and/or operation) to prevent or mitigate large or early radioactive releases should be sought and implemented.

Effective independence of the regulatory body

7. **Proposal:** Switzerland encourages States parties to establish a regulatory body entrusted with the implementation of the legislative and regulatory framework and provided with the adequate authority, competence and financial and human resources to fulfil its assigned responsibilities. Switzerland further encourages States parties to take the appropriate steps to ensure an effective separation of the functions of the

regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy.

8. **Rationale:** The importance of regulatory independence is recognized in the Convention on Nuclear Safety and the IAEA safety requirements on legal and governmental infrastructure for safety. It was highlighted again as a major lesson learned from the accident at Fukushima Daiichi. Both documents address the establishment of a regulatory body and the need for its separation, or independence, from the promoters of nuclear technology. The primary reason for this separation is to ensure that regulatory judgments can be made, and enforcement actions taken, without pressure from interests that may conflict with safety. Furthermore, the credibility of the regulatory body in the eyes of the general public depends in large part upon whether the regulatory body is regarded as being independent of the organizations that it regulates, as well as independent of government agencies or industry groups that promote nuclear technologies. Effective regulatory independence includes the following aspects:

(a) **Political independence:** The political system should ensure the clear and effective separation of the responsibilities (duties) of the regulatory body and those of organizations responsible for the development of nuclear technologies. The regulatory body should not be subject to political influence or pressure in taking safety decisions;

(b) **Legislative independence:** In the legislative framework of a national regulatory system (e.g., atomic laws or decrees), the role, competence and independence of the regulatory body with respect to safety should be defined. The regulatory body should have the authority to adopt or develop safety regulations that implement laws passed by the legislature. The regulatory body should also have the authority to take decisions, including enforcement actions. There should be a formal mechanism for appealing regulatory decisions, with predefined conditions that must be met for an appeal to be considered. The regulatory body should have the responsibility for adopting or developing safety regulations that implement laws passed by the legislature;

(c) **Financial independence:** The regulatory body should be provided with adequate authority and power, and it should be ensured that it has adequate staffing and financial resources to discharge its assigned responsibilities;

(d) **Competence-based independence:** The regulatory body should have independent technical expertise in the areas relevant to its safety mission. The management within the regulatory body should, therefore, have the responsibility and authority to recruit staff with the skills and technical expertise considered necessary to carry out the regulatory functions. In addition, the regulatory body should maintain awareness of the state of the art in safety technology;

(e) **Information provided to the public:** The regulatory body should have the authority to communicate independently its regulatory requirements, decisions and opinions and their basis to the public, in a timely and comprehensible manner;

(f) **International independence**: The regulatory body should have the authority to liaise with regulatory bodies of other countries and with international organizations in order to promote cooperation and the exchange of regulatory information.

Peer reviews and sharing of best practices

9. **Proposal:** Switzerland encourages States parties to undertake periodic international peer review missions and strengthen international, regional and bilateral cooperation.

10. **Rationale:** In the field of nuclear safety, the Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management are the only internationally legally binding instruments that enable contracting parties to review their nuclear safety approaches and strengthen nuclear safety worldwide. Since its entry into force, the Convention has undergone various developments with regard to its review process. One of the major developments took place at the sixth Review Meeting, in 2014, in which contracting parties committed themselves to not only holding a diplomatic conference in 2015 for discussions on an amendment to article 18 of the Convention, proposed by Switzerland, but also to increasing transparency, strengthening the effectiveness of the Convention and making the review process more rigorous. It was not possible at that time to reach consensus on amending the Convention, however, the Vienna Declaration on Nuclear Safety, as a consensual political commitment by all contracting parties to the Convention, was adopted. Meanwhile, the Vienna Declaration has become a reference document in the continuous efforts to strengthen nuclear safety, not only within the Convention but worldwide. This has been demonstrated within the Convention review process, in the resolutions on nuclear safety adopted since 2015 by the General Conference of IAEA and in the Agency's safety standards.

11. In order to enhance nuclear safety worldwide, the sharing of best practices and lessons learned among States parties is essential. Thus, States parties should recommit themselves to periodically and regularly hosting international peer review missions regarding the functions of the regulatory body and the design, construction and operation of nuclear power plants. The measures identified should be implemented in a timely manner and communicated in a transparent way.

Interface between nuclear safety and security

12. **Proposal:** Switzerland encourages States parties to design and implement safety and security measures in an integrated manner so that security measures do not compromise safety and safety measures do not compromise security.

13. **Rationale:** Switzerland believes that nuclear safety and security serve the same purpose, namely, to protect the population and the environment from the harmful effects of ionizing radiation. For this reason, the development of a common culture of nuclear safety and security is important. This can be achieved through the establishment of a single regulatory agency responsible for both sets of requirements, thereby helping to ensure compatibility and coordination. Any number of situations may give rise to safety-security interface issues, such as changes in the conditions of facilities or activities, procedural changes, process changes, the installation of items and so on. The most important aspect of addressing nuclear safety-security interfaces is to establish management systems or procedures that allow for identifying such interfaces and the development of solutions that satisfy the requirements or guidance for both safety and security. This should be an inherent element of the safety and security culture of each State party.